

HATCHERY AND GENETIC MANAGEMENT PLAN (HGMP)

Hatchery Program:

Agate Pass Seapens

**Species or
Hatchery Stock:**

Coho

Agency/Operator:

Suquamish Indian Tribe

Watershed and Region:

East Kitsap WRIA-15 (site 18.8106)

Date Submitted:

December 18, 2001

Date Last Updated:

March 14, 2003

SECTION 1. GENERAL PROGRAM DESCRIPTION

1.1) Name of hatchery or program.

Agate Pass Seapens

1.2) Species and population (or stock) under propagation, and ESA status.

Coho Salmon, *Onchorynchus kisutch*, Minter Creek Hatchery Stock. Not Listed.

1.3) Responsible organization and individuals

Name (and title): Paul Dorn, Salmon Recovery Coordinator

Agency or Tribe: Suquamish Tribe

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Other agencies, Tribes, co-operators, or organizations involved, including contractors, and extent of involvement in the program: WDFW supplies yearling coho to the net pens. NWIFC provides fish health inspections. The Tribe provide staff to feed, monitor, dive for mortalities and repair facilities, boat, and collect and distribute data .

1.4) Funding source, staffing level, and annual hatchery program operational costs.

The primary funding source is WDFW: provides the smolts (600,000/30 fpp=\$60,000.00 value of coho smolts transferred into the seapens; plus fish food fed during seapen rearing=\$20,000.00); Port of Seattle settlement provided the capital to fund the spar-buoy system (\$274,000.00); and the Tribe (annual diving contract \$2,000.00, part time technician and boat, \$10,000.00).

1.5) Location(s) of hatchery and associated facilities.

Agate Pass, Kitsap County WRIA-15 release site number 88.8106

1.6) Type of program.

Isolated Harvest

1.7) Purpose (Goal) of program.

Mitigation. The goal of the Agate Pass net pen is to provide a terminal Suquamish Treaty coho fishery and to contribute to the non-Treaty sport and commercial fisheries.

1.8) Justification for the program.

The Suquamish program will provide marked coho salmon for treaty ceremonial and subsistence and commercial as well as recreational and non-treaty commercial fishers. The Suquamish terminal fishery will be isolated to minimize take of listed species.

1.9) List of program "Performance Standards".

1.9.1) Release healthy delayed release coho smolts.

1.9.2) The returning net pen coho are harvested in a target fishery after chinook past by.

1.10) List of program “Performance Indicators”, designated by "benefits" and "risks."

1.10.1) “Performance Indicators” addressing benefits.

Estimate the ocean survival rate and fishery exploitation rates for tagged APS coho:

BY Year	Release Year	Release	Catch	% Contribution
1980	1982	195720	36672	18.7
1981	1983	197984	19476	9.8
1982	1984	194560	21703	11.0
1983	1985	282202	45685	16.2
1984	1986	387042	*	*
1985	1987	424191	76039	17.9
1986	1988	375059	61540	16.4
1987	1989	426806	96271	22.6
1988	1990	355679	44915	12.6
1989	1991	487662	43957	9.0
1990	1992	482959	23682	4.9
1991	1993	299487	*	*
1992	1994	554987	13509	2.4
1993	1995	467189		
1994	1996	620482		
1995	1997	578178		
1996	1998	542307		
1997	1999	544734		
1998	2000	545858		
1999	2001	199421		
2000	2002	322726		

* NO CWT RELEASES

1.10.2) “Performance Indicators” addressing risks.

Estimate the hatchery contribution by area and time in the target fishery.

1.11) Expected size of program.

Agate Pass Seapens annual production is planned to be 600,000 delayed coho smolts.

1.11.1) Proposed annual broodstock collection level (maximum number of adult fish).

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

1.11.2) Proposed annual fish release levels (maximum number) by life stage and location.

Life Stage	Release Location	Annual Release Level
Eyed Eggs		
Unfed Fry		
Fry		
Fingerling		
Yearling	Agate Pass Net pens	600,000

1.12) Current program performance, including estimated smolt-to-adult survival rates, adult production levels, and escapement levels. Indicate the source of these data.

Year	Release	Catch	% Contribution
1980	195720	36672	18.7
1981	197984	19476	9.8
1982	194560	21703	11.0
1983	282202	45685	16.2
1984	387042	*	*
1985	424191	76039	17.9
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1987	426806	96271	22.6
1988	355679	44915	12.6
1989	487662	43957	9.0
1990	482959	23682	4.9
1991	299487	*	*
1992	554987	13509	2.4

* NO CWT RELEASES

1.13) Date program started (years in operation), or is expected to start.

This program was started in 1981 with Brood Year 1979.

1.14) Expected duration of program.

This program is planned to last indefinitely.

1.15) Watersheds targeted by program.

East Kitsap WRIA 15.

1.16) Indicate alternative actions considered for attaining program goals, and reasons

why those actions are not being proposed.

Habitat restoration projects are being pursued that will benefit coho in the long run (decades), but not allow harvest for the foreseeable future.

The Tribe operated a water reuse hatchery to produce coho for over 10 years, but the cost to operate the facility versus the numbers that escaped mixed-stock fisheries to provide a terminal Tribal harvest were too low to justify the cost to produce the terminal harvest.

SECTION 2. PROGRAM EFFECTS ON ESA-LISTED SALMONID POPULATIONS.

2.1) List all ESA permits or authorizations in hand for the hatchery program.

This HGMP is being provided so that NOAA Fisheries may initiate evaluation of the Agate Pass Seapen coho program pursuant to limit 6 of the ESA section 4(d) rule (50 CFR 223.203 (b)(6)) for the Puget Sound chinook ESU and to complement any Section 7 consultations on tribal hatchery programs.

2.2) Provide descriptions, status, and projected take actions and levels for ESA-listed natural populations in the target area.

2.2.1) Description of ESA-listed salmonid population(s) affected by the program.

Puget Sound chinook juveniles utilize the shorelines and estuaries of East Kitsap during their migration to the ocean. Adult chinook are assumed to migrate thru these same waters as they return to mid- and south-Sound rivers to spawn.

- Identify the ESA-listed population(s) that will be directly affected by the program.

No listed Puget Sound chinook are directly affected by this program.

- Identify the ESA-listed population(s) that may be incidentally affected by the program.

Puget Sound chinook may be incidentally affected by this program.

2.2.2) Status of ESA-listed salmonid population(s) affected by the program.

- Describe the status of the listed natural population(s) relative to “critical” and “viable” population thresholds

Not applicable to this HGMP.

- Provide the most recent 12 year (e.g. 1988-present) progeny-to-parent ratios, survival data by life-stage, or other measures of productivity for the listed population. Indicate the source of these data.

Not applicable to this HGMP.

- Provide the most recent 12 year (e.g. 1988-1999) annual spawning abundance estimates, or any other abundance information. Indicate the source of these data.

Not applicable to this HGMP.

- Provide the most recent 12 year (e.g. 1988-1999) estimates of annual proportions of direct hatchery-origin and listed natural-origin fish on natural spawning grounds, if known.

Please refer to the Suquamish Tribe's Grovers Creek Fall Chinook Program HGMP.

2.2.3) Describe hatchery activities, including associated monitoring and evaluation and research programs, that may lead to the take of listed fish in the target area, and provide estimated annual levels of take

- Describe hatchery activities that may lead to the take of listed salmonid populations in the target area, including how, where, and when the takes may occur, the risk potential for their occurrence, and the likely effects of the take.

The operation would have a very low probability of take until release. When the delayed release coho are released, predation on chinook fry potentially could occur.

- Provide information regarding past takes associated with the hatchery program, (if known) including numbers taken, and observed injury or mortality levels for listed fish.

None known.

- Provide projected annual take levels for listed fish by life stage (juvenile and adult) quantified (to the extent feasible) by the type of take resulting from the hatchery program (e.g. capture, handling, tagging, injury, or lethal take).

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP. For the Agate Pass Seapens operation, it's unknown what level of take may occur.

- Indicate contingency plans for addressing situations where take levels within a given year have exceeded, or are projected to exceed, take levels described in this plan for the program.

Should take of listed species exceed future levels prescribed in this plan, the production of the seapens could be reduced or terminated.

SECTION 3. RELATIONSHIP OF PROGRAM TO OTHER MANAGEMENT OBJECTIVES

- 3.1) Describe alignment of the hatchery program with any ESU-wide hatchery plan (e.g. *Hood Canal Summer Chum Conservation Initiative*) or other regionally accepted policies (e.g. the NPPC *Annual Production Review Report and Recommendations* - NPPC document 99-15). Explain any proposed deviations from the plan or policies.**
The Agate Pass Seapens are programmed in WDFW's Future Brood document.
- 3.2) List all existing cooperative agreements, memoranda of understanding, memoranda of agreement, or other management plans or court orders under which program**

operates.

The Agate Pass Seapens production is part of the South Sound State/Tribal Management Harvest Plan and the NPPC *Annual Production Review* Report and Recommendations – NPPC document 99-15.

3.3) Relationship to harvest objectives.

3.3.1) Describe fisheries benefiting from the program, and indicate harvest levels and rates for program-origin fish for the last twelve years (1988-99), if available.

The fisheries that benefit from this program are, Alaska, Canada, Puget Sound Treaty and non-Treaty net fisheries and recreational fishers.

Brood Year	Total Catch	Estimated Total Catch by Area												
		Alaska	Canada	WA Coast and South	Strait Net and Troll	Strait Sport	Hood Canal	North Puget Sound Net	North Puget Sound Sport	Mid Puget Sound Net	Mid Puget Sound Sport	South Puget Sound Net	South Puget Sound Sport	All Freshwater
79	*	*	*	*	*	*	*	*	*	*	*	*	*	*
80	36,672	0	11,894	799	330	1,320	330	733	110	16,502	3,594	367	110	550
81	19,476	0	9,496	585	467	292	97	818	0	6,427	662	39	0	604
82	21,703	0	8,853	1,165	456	282	65	1,519	0	8,486	521	130	0	239
83	45,685	0	18,345	1,478	891	1,142	1,416	1,713	0	18,571	594	777	0	708
84	*	*	*	*	*	*	*	*	*	*	*	*	*	*
85	76,039	0	31,512	3,414	228	1,749	0	1,673	152	34,522	836	1,217	0	760
86	61,540	0	28,846	1,288	862	2,277	246	1,169	185	24,924	677	308	62	677
87	96,271	0	38,478	3,186	481	6,065	0	770	0	44,477	2,118	385	0	289
88	44,915	0	22,055	1,654	808	2,380	0	2,605	90	13,924	898	225	0	225
89	43,957	0	23,320	3,783	44	1,582	0	264	220	12,396	1,890	220	0	264
90	23,682	41	14,350	3,278	0	971	0	142	474	2,060	1,326	308	0	758
91	*	*	*	*	*	*	*	*	*	*	*	*	*	*
92	13,509	0	9,078	684	216	0	0	54	0	2,972	0	459	0	54
Average		4	19,657	1,937	435	1,642	196	1,042	112	16,842	1,192	403	16	466

* No CWT Releases

Year	Release	Catch	% Contribution
1980	195720	36672	18.7
1981	197984	19476	9.8
1982	194560	21703	11.0
1983	282202	45685	16.2
1984	387042	*	*
1985	424191	76039	17.9

1986	375059	61540	16.4
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1990	482959	23682	4.9
1991	299487	*	*
1992	554987	13509	2.4

* NO CWT RELEASES

3.4) Relationship to habitat protection and recovery strategies.

East Kitsap streams are small and have been impacted by anthropogenic activities. Groundwater withdrawals exacerbate instream low flows, further compromising the conditions necessary to support naturally spawning coho populations. Agate Pass Seapen coho contribute spawning adults in adjacent streams that would otherwise have no coho spawning. The visibility of these seapen coho contribute community support for stream restoration.

3.5) Ecological interactions.

Agate Pass coho can negatively impact listed fish populations through reduced growth, survival and abundance. Several methods have been developed to assess potential negative ecological interactions and risks associated with hatchery programs (Pearsons and Hopley 1999; Ham and Pearsons 2001). Hatchery fish can interact with listed fish species through competition and predation (Fresh 1997). The degree to which fish interact depends upon fish life-history characteristics which include: 1) size and morphology, 2) behavior, 3) habitat use and 4) movements (Flagg et al. 2000). Important considerations associated with hatchery practices include the type of species reared, fish size at time of release, number of fish released and location(s) of program releases. Interaction potential between hatchery origin fish and natural origin fish can certainly depend on habitat structure and system productivity. For example, habitat structure can influence predator-prey encounter rates (visibility), the amount of preferred spawning habitat and fish susceptibility to flushing flows. System productivity determines the degree to which fish populations may be food-limited, and thus negatively impacted by density-dependent effects. The type and degree of risk associated with releases of program fish typically involve complex mechanisms. Actual identification and magnitude of causal mechanisms negatively impacting listed fish is not always definitive due to confounding factors such as human-induced environmental changes, indirect pathway effects and the diversity of environments salmon occupy throughout their life-cycle (Li et al. 1987; Fausch 1988; Fresh 1997; Flagg et al. 2000). Given these complex mechanisms and site-specific considerations it is not surprising that for most hatchery programs, the extent of possible adverse competition and predation effects of hatchery releases on listed fish populations throughout Puget Sound have not been explicitly documented or quantified. Given the perceived risks associated with hatchery programs, Agate Pass Seapen coho are reared and released in a manner to minimize potential negative impacts on listed chinook salmon and bull trout populations (see Section 10.11). Releases of 600,000 delayed release coho pose a predation risk on juvenile fall chinook,

both in the freshwater and marine environment (Hargreaves and LeBrasseur 1985; Hawkins and Tipping 1999; Pearsons and Fritts 1999). Actual rates of predation by program releases of yearling XXXX salmon on juvenile chinook and chum salmon are unknown at this time.

SECTION 4. WATER SOURCE

4.1) Provide a quantitative and narrative description of the water source (spring, well, surface), water quality profile, and natural limitations to production attributable to the water source.

The water source for the seapens is Agate Pass. Maximum current velocity is two knots. To illustrate the very good water quality, with the seapens production program in place, Agate Pass is approved for shellfish harvest. NPDES permit requirements are followed.

4.2) Indicate risk aversion measures that will be applied to minimize the likelihood for the take of listed natural fish as a result of hatchery water withdrawal, screening, or effluent discharge.

None required for this program.

SECTION 5. FACILITIES

5.1) Broodstock collection facilities (or methods).

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

5.2) Fish transportation equipment (description of pen, tank truck, or container used).

The coho smolts are moved from Minter Creek Hatchery (WDFW) in State fish transport trucks. They are offloaded onto the tribal transport barge for hauling to the seapens, then transferred into the seapens.

5.3) Broodstock holding and spawning facilities.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

5.4) Incubation facilities.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

5.5) Rearing facilities.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

5.6) Acclimation/release facilities.

Agate Pass netpens.

5.7) Describe operational difficulties or disasters that led to significant fish mortality.

In the past there have been losses to Bacterial Kidney Disease (BKD), abdominal distension disorder (Bloat) and the inability of the smolts to adapt to the saltwater environment. The most important aspect of this project is to move these fish when their bodies are ready for saltwater. Transportation in the past has been in February and March. Now they are delivered as early as the middle of December with massive losses. Large

size doesn't matter, timing of placement in saltwater does. There is a potential for a noxious phytoplankton outbreak, but we monitor the water and have not had a problem.

- 5.8) Indicate available back-up systems, and risk aversion measures that will be applied, that minimize the likelihood for the take of listed natural fish that may result from equipment failure, water loss, flooding, disease transmission, or other events that could lead to injury or mortality.**

None required.

SECTION 6. BROODSTOCK ORIGIN AND IDENTITY

Describe the origin and identity of broodstock used in the program, its ESA-listing status, annual collection goals, and relationship to wild fish of the same species/population.

6.1) Source.

Year	Broodstock
1979	May/Wallace
1980	Minter/Purdy
1981	Skykomish/May
1982	Skykomish/May
1983	Wallace River
1984	Skykomish River
1985	May/Wallace
1986	Skykomish/G.Adams
1987	Minter Creek/May/Skykomish
1988	May/Wallace
1989	Wallace River
1990	Minter Creek/Wallace River
1991	Minter Creek/ May/Skykomish
1992	Minter Creek
1993	Minter Creek
1994	Minter Creek
1995	Wallace River
1996	Minter Creek
1997	Minter Creek
1998	Minter Creek
1999	Minter Creek
2000	Minter Creek

There are no Listed Species used in this program. Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP for annual collection goals and relationship to wild coho.

6.2) Supporting information.

6.2.1) History.

Early broodstock for this program was haphazard. The WDFW hatchery with extra incubation availability supplied this program. The South Sound stock from Minter Creek hatchery is now the main source of coho for this program.

6.2.2) Annual size.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

6.2.3) Past and proposed level of natural fish in broodstock.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

6.2.4) Genetic or ecological differences.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

6.2.5) Reasons for choosing.

This stock was chosen because it's the closest geographically available broodstock.

6.3) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed natural fish that may occur as a result of broodstock selection practices.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

SECTION 7. BROODSTOCK COLLECTION

7.1) Life-history stage to be collected (adults, eggs, or juveniles).

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.2) Collection or sampling design.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.3) Identity.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.4) Proposed number to be collected:

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.4.1) Program goal (assuming 1:1 sex ratio for adults):

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.4.2) Broodstock collection levels for the last twelve years (e.g. 1988-99), or for most recent years available:

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.5) Disposition of hatchery-origin fish collected in surplus of broodstock needs.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.6) Fish transportation and holding methods.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.7) Describe fish health maintenance and sanitation procedures applied.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.8) Disposition of carcasses.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

7.9) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed natural fish resulting from the broodstock collection program.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

SECTION 8. MATING

Describe fish mating procedures that will be used, including those applied to meet performance indicators identified previously.

8.1) Selection method.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

8.2) Males.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

8.3) Fertilization.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

8.4) Cryopreserved gametes.

Not Applicable.

8.5) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed natural fish resulting from the mating scheme.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

SECTION 9. INCUBATION AND REARING -

Specify any management *goals* (e.g. “egg to smolt survival”) that the hatchery is currently operating under for the hatchery stock in the appropriate sections below. Provide data on the success of meeting the desired hatchery goals.

9.1) Incubation:

9.1.1) Number of eggs taken and survival rates to eye-up and/or ponding.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

9.1.2) Cause for, and disposition of surplus egg takes.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

9.1.3) Loading densities applied during incubation.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

9.1.4) Incubation conditions.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

9.1.5) Ponding.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

9.1.6) Fish health maintenance and monitoring.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

9.1.7) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish during incubation.

Please refer to Minter Creek Salmon Hatchery (WDFW) HGMP.

9.2) Rearing:

9.2.1) Provide survival rate data (*average program performance*) by hatchery life stage (fry to fingerling; fingerling to smolt) for the most recent twelve years (1988-99), or for years dependable data are available.

Survival during rearing in the seapens is documented as follows:

BY Year	Start	Release	% Mortality
1979	50410	49855	1.08
1980	196000	195720	0.14
1981	198592	197984	0.31
1982	200000	194560	2.72
1983	324806	282202	13.12
1984	391088	387042	2.87
1985	433025	424191	3.66
1986	385157	375059	1.99
1987	431400	426806	1.63
1988	368247	355679	3.41
1989	536129	487662	8.11
1990	517500	482959	6.00
1991	412422	299487	27.38
1992	594953	554987	6.72
1993	529880	467189	11.83
1994	653983	620482	5.12
1995	608897	578178	12.92

1996	615227	542307	11.85
1997	610437	544734	10.76
1998	612460	545858	9.03
1999	321876	199421	38.04
2000	355988	322726	10.27
2001	208,000		

9.2.2) Density and loading criteria (goals and actual levels).

Maximum loading densities do not exceed 0.5 lbs/cubic foot.

9.2.3) Fish rearing conditions

The 60,000 cubic foot seapen is checked and fed daily. Water salinity, temperature, DO, and visibility (secchi disc – surrogate for plankton blooms) are checked daily. There is a mortality dive three times a week, more if necessary, to remove dead, check behavior, repair net predator damage, and monitor bottom below pens for uneaten food.

9.2.4) Indicate biweekly or monthly fish growth information (*average program performance*), including length, weight, and condition factor data collected during rearing, if available.

Weight samples are taken every other week with feed rates adjusted accordingly. The coho triple their weight during the marine rearing.

9.2.5) Indicate monthly fish growth rate and energy reserve data (*average program performance*), if available.

See above, energy reserve data not available.

9.2.6) Indicate food type used, daily application schedule, feeding rate range (e.g. % B.W./day and lbs/gpm inflow), and estimates of total food conversion efficiency during rearing (*average program performance*).

BioProducts is fed at a rate of 1.2% body weight.

Skretting (Moore Clark) smolt HP and Trout AB are fed at a daily weight of 1.2% body weight.

9.2.7) Fish health monitoring, disease treatment, and sanitation procedures.

The WDFW is responsible for monitoring and treatment is the freshwater phase. NWIFC pathologists monitor the saltwater phase. Tribal staff apply medicated diets (if required) and standard disinfection procedures are followed for all gear and equipment.

9.2.8) Smolt development indices (e.g. gill ATPase activity), if applicable.

None.

9.2.9) Indicate the use of "natural" rearing methods as applied in the program.

The spar buoy system holds a constant volume and is located within moderate current which allows transport of natural food prey through the net.

9.2.10) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish under propagation.
Not applicable.

SECTION 10. RELEASE

Describe fish release levels, and release practices applied through the hatchery program.

10.1) Proposed fish release levels.

Age Class	Maximum Number	Size (fpp)	Release Date	Location
Eggs				
Unfed Fry				
Fry				
Fingerling				
Yearling	600,000	10 (fpp)	June 1st	Agate pass

10.2) Specific location(s) of proposed release(s).

Basin or Region:

Agate Pass, Puget Sound.

10.3) Actual numbers and sizes of fish released by age class through the program.

Release year	Yearling	Avg size
1981	49855	8 fpp
1982	195720	11 fpp
1983	197984	20.7 fpp
1984	194560	13.5 fpp
1985	282202	17 fpp
1986	379860	9.5 fpp
1987	417171	11.4 fpp
1988	377497	12 fpp
1989	424368	11 fpp
1990	492662	10 fpp

Release year	Yearling	Avg size
1991	486459	10.5 fpp
1992	299487	12.5 fpp
1993	554987	15 fpp
1994	554987	12 fpp
1995	467189	16 fpp
1996	620482	12.5 fpp
1997	578178	13 fpp
1998	542307	10 fpp
1999	544734	12 fpp
2000	545858	12.7 fpp
2001	199421	8 fpp
2002	322726	10 fpp
Ave		

10.4) Actual dates of release and description of release protocols.

Release Year	Release Date
1981	5-29-81
1982	6-3-82
1983	5-27-83
1984	6-4-84
1985	6-3-85
1986	6-3-86
1987	5-19-87
1988	5-31-88
1989	6-6-89
1990	6-13-90
1991	6-19-91
1992	5-14-92
1993	5-24-93
1994	4-23-94
1995	5-25-95
1996	6-8-96

1997	5-19-97
1998	5-9-98
1999	6-14-99
2000	4-24-00
2001	5-5-01
2002	5-21-02

10.5) Fish transportation procedures, if applicable.

Coho are transported from Coulter Creek rearing ponds via WDFW transport trucks. During transport they are immersion vaccinated against Vibriosis. The coho are offloaded onto a tribal transport barge equipped with air stones and trash pumps to replace freshwater with saltwater. The coho are gravity fed from the barge into the netpens.

10.6) Acclimation procedures.

Acclimation is immediate (forced), fish not smolted perish within a few days.

10.7) Marks applied, and proportions of the total hatchery population marked, to identify hatchery adults.

Approximately ten percent of the total population is CWTagged. From 1997 to the present all Agate Pass Seapen coho are mass marked (adipose clipped).

10.8) Disposition plans for fish identified at the time of release as surplus to programmed or approved levels.

Not applicable.

10.9) Fish health certification procedures applied pre-release.

The NWIFC pathologists take a sixty fish sample on transfer into saltwater, perform routine monthly samples, and sample 60 fish before release. All data is reported in standard fish health report format.

10.10) Emergency release procedures in response to flooding or water system failure.

The nets can be opened to release fish if a water quality problem (like noxious algae) were to occur.

10.11) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish resulting from fish releases.

The yearling coho will be released in June to minimize the impact on migrating chinook.

SECTION 11. MONITORING AND EVALUATION OF PERFORMANCE INDICATORS

This section describes how "Performance Indicators" listed in Section 1.10 will be monitored. Results of "Performance Indicator" monitoring will be evaluated annually and used to adaptively manage the hatchery program, as needed, to meet "Performance Standards".

11.1) Monitoring and evaluation of “Performance Indicators” presented in Section 1.10.

11.1.1) Describe plans and methods proposed to collect data necessary to respond to each “Performance Indicator” identified for the program.

The Agate Pass Seapen coho are coded wire tagged. This requires recovery of tags in all locations, including ocean and terminal fisheries. The Tribal net fisheries are monitored for tagged fish, marked fish, and the Tribal hatchery rack samples 100% of all fish returning regardless of species. The Tribe conducts spawning ground surveys and recovers CWT’s from spawned out adults. This data is turned over to the NWIFC and WDFW.

11.1.2) Indicate whether funding, staffing, and other support logistics are available or committed to allow implementation of the monitoring and evaluation program.

The Tribe is committed to sample the terminal fishery, hatchery rack, and spawning ground as long as present Federal and State funding is committed to the program.

11.2) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish resulting from monitoring and evaluation activities.

The coho fishery occurs after the chinook run is over and coho gear is sized to avoid take of chinook.

SECTION 12. RESEARCH

12.1) Objective or purpose.

No research occurring at this time.

12.2) Cooperating and funding agencies.

Not applicable.

12.3) Principle investigator or project supervisor and staff.

Not applicable.

12.4) Status of stock, particularly the group affected by project, if different than the stock(s) described in Section 2.

Not applicable.

12.5) Techniques: include capture methods, drugs, samples collected, tags applied.

Not applicable.

12.6) Dates or time period in which research activity occurs.

Not applicable.

12.7) Care and maintenance of live fish or eggs, holding duration, transport methods.

Not applicable.

12.8) Expected type and effects of take and potential for injury or mortality.

Not applicable.

12.9) Level of take of listed fish: number or range of fish handled, injured, or killed by sex, age, or size, if not already indicated in Section 2 and the attached “take table” (Table 1).

Not applicable.

12.10) Alternative methods to achieve project objectives.

Not applicable.

12.11) List species similar or related to the threatened species; provide number and causes of mortality related to this research project.

Not applicable.

12.12) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse ecological effects, injury, or mortality to listed fish as a result of the proposed research activities.

Not applicable.

SECTION 13. ATTACHMENTS AND CITATIONS

Please find attached a paper presented at the 1996 NWFCC.

Fausch KD. 1988. Tests of competition between native and introduced salmonids in streams: what have we learned? Canadian Journal of Fisheries and Aquatic Sciences 45:2238-2246.

Flagg TA, Berejikian BA, Colt JE, Dickhoff WW, Harrell LW, Maynard DJ, Nash CE, Strom MS, Iwamoto RN, Mahnken CVW. 2000. Ecological and behavioral impacts of artificial production strategies on the abundance of wild salmonid populations; a review of practices in the Pacific Northwest. NOAA Technical Memorandum NMFS-NWFSC-41.

Fresh KL. 1997. The role of competition and predation in the decline of Pacific salmon and steelhead. In: Stouder DJ, Bisson PA, Naiman RJ, Duke MG, editors. Pacific salmon and their ecosystems. New York, NY: Chapman and Hall. p 245-275.

Ham KD, Pearsons TN. 2001. A practical approach for containing ecological risks associated with fish stocking programs. Fisheries 26(4):15-23.

Hargreaves NB, LeBrasseur RJ. 1985. Species selective predation on juvenile pink (*Oncorhynchus gorbuscha*) and chum salmon (*O. keta*) by coho salmon (*O. kisutch*). Canadian Journal of Fisheries and Aquatic Sciences 42:659-668.

Hawkins SW, Tipping JM. 1999. Predation by juvenile hatchery salmonids on wild fall chinook salmon fry in the Lewis River, Washington. California Fish and Game 85(3):124-129.

Li HW, Schreck CB, Bond CE, Rexstad E. 1987. Factors influencing changes in fish assemblages of Pacific Northwest streams. In: Matthews WJ, Heins DC, editors. Community and Evolutionary

Ecology of North American Fishes: University of Oklahoma Press, Norman and London. p 193-202.

Pearsons TN, Fritts AL. 1999. Maximum size of chinook salmon consumed by juvenile coho salmon. North American Journal of Fisheries Management 19:165-170.

Pearsons TN, Hopley CW. 1999. A practical approach for assessing ecological risks associated with fish stocking programs. Fisheries 24(9):16-27.

SECTION 14. CERTIFICATION LANGUAGE AND SIGNATURE OF RESPONSIBLE PARTY

“I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand that the information provided in this HGMP is submitted for the purpose of receiving limits from take prohibitions specified under the Endangered Species Act of 1973 (16 U.S.C.1531-1543) and regulations promulgated thereafter for the proposed hatchery program, and that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or penalties provided under the Endangered Species Act of 1973.”

Name, Title, and Signature of Applicant:

Certified by _____ Date: _____

Table 1. Estimated listed salmonid take levels of by hatchery activity.

Listed species affected: _____ ESU/Population: _____ Activity: _____			
Location of hatchery activity: _____		Dates of activity: _____ Hatchery program operator: _____	
Type of Take	Annual Take of Listed Fish By Life Stage (<i>Number</i>)		
	Egg/Fry	Juvenile/Smolt	Adult
Observe or harass a)			
Collect for transport b)			
Capture, handle, and release c)			
Capture, handle, tag/mark/tissue sample, and release d)			
Removal (e.g. broodstock) e)			
Intentional lethal take f)			
Unintentional lethal take g)			
Other Take (specify) h)			

- a. Contact with listed fish through stream surveys, carcass and mark recovery projects, or migrational delay at weirs.
- b. Take associated with weir or trapping operations where listed fish are captured and transported for release.
- c. Take associated with weir or trapping operations where listed fish are captured, handled and released upstream or downstream.
- d. Take occurring due to tagging and/or bio-sampling of fish collected through trapping operations prior to upstream or downstream release, or through carcass recovery programs.
- e. Listed fish removed from the wild and collected for use as broodstock.
- f. Intentional mortality of listed fish, usually as a result of spawning as broodstock.
- g. Unintentional mortality of listed fish, including loss of fish during transport or holding prior to spawning or prior to release into the wild, or, for integrated programs, mortalities during incubation and rearing.
- h. Other takes not identified above as a category.

Instructions:

1. An entry for a fish to be taken should be in the take category that describes the greatest impact.
2. Each take to be entered in the table should be in one take category only (there should not be more than one entry for the same sampling event).
3. If an individual fish is to be taken more than once on separate occasions, each take must be entered in the take table.